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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/855,556	05/16/2001	Timothy Warner	01101	1507

23338 7590 08/22/2002

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EXAMINER

COMBS, JANEL A

ART UNIT	PAPER NUMBER
1742	5

DATE MAILED: 08/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/855,556

Applicant(s)

WARNER, TIMOTHY

Examiner

Janelle Combs-Morillo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 June 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 8-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's election without traverse of Group I in Paper No. 4 is acknowledged.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-5 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyasato et al (US 5,865,912 A).

Miyasato teaches rolled, forged, or extruded (column 18 line 60, column 3 lines 7-12) aluminum alloy product typically 0.35-2.1 inches thick (9-53 mm, column 6 lines 23-26), with a composition consisting of (in weight%): 5.2-6.8% Zn, 1.7-2.4% Cu, 1.6-2% Mg, 0.03-0.3%Zr, balance aluminum (abstract). Miyasato teaches a conventional T6 temper can be applied- which includes solution heat treating, quenching, and artificially aging (column 20 lines 47-50), substantially as presently claimed. Miyasato teaches that said product is preferably 85-100% unrecrystallized (column 16 lines 43-46). The examiner points out that an unrecrystallized structure (substantially 100% unrecrystallized) meets the presently claimed limitation of <35 vol% recrystallized grains in between one-quarter and mid-thickness. Additionally, if no recrystallized grains are present, then the intercept distance between recrystallized areas = infinity (and therefore meets the instant limitation of >250  $\mu\text{m}$ ).

Because Miyasato teaches an aluminum alloy product with substantially the same composition, processed substantially as presently claimed, and with microstructural characteristics that meet the instant limitations, it is held that Miyasato has created a prima facie case of obviousness of the presently claimed invention.

Concerning dependent claims 2 and 3, as stated above, because Miyasato teaches no recrystallized grains are present, then the intercept distance between recrystallized areas = infinity (and therefore meets the instant limitations).

Concerning dependent claims 4 and 5, Miyasato teaches an overlapping alloy composition (as stated above).

Concerning dependent claim 15, Miyasato teaches that said product can be used for a structural member of an aircraft (column 19 lines 53-54).

4. Claims 1-3 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over “ASM Handbook: Volume 9 Metallography and Microstructures” in view of Shahani et al (US 6,027,582).

“ASM Handbook: Vol 9” teaches several unrecrystallized alloys that are in conventional T6 tempers (solution heated, quenched, artificially aged), and have been worked by forging, see Fig. 54 (alloy 2219-T6) and Fig. 67 (alloy 7079-T6). As stated above, the examiner points out that an unrecrystallized structure (substantially 100% unrecrystallized) meets the presently claimed limitation of <35 vol% recrystallized grains in between one-quarter and mid-thickness. Additionally, if no recrystallized grains are present, then the intercept distance between recrystallized areas = infinity (and therefore meets the instant limitation of >250  $\mu\text{m}$ ).

“ASM Handbook: Vol 9” does not teach the thickness of said forgings. However, it is known in the art to forge products >12 mm thick. This is supported by Shahani column 12 lines 61-62, who teaches Al-Zn-Mg-Cu alloys suitable for aerospace applications are typically rolled, extruded, or forged in products >60 mm thick. It would have been obvious to one of ordinary skill in the art to forge said AlZnMgCu alloy into an unrecrystallized (as taught by “ASM Handbook: Vol 9”) thick product >12 mm thick (as taught by Shahani) because Shahani teaches that said it is conventional in the art to forge Al-Zn-Mg-Cu alloys into said thickness.

Concerning dependent claims 2 and 3, as stated above, because “ASM Handbook: Vol 9” teaches no recrystallized grains are present, then the intercept distance between recrystallized areas = infinity (and therefore meets the instant limitations).

Concerning dependent claim 15, Shahani teaches that said product can be used for a structural member of an aircraft (abstract). Because both “ASM Handbook: Vol 9” and Shahani are drawn to substantially similar 7000 series aluminum alloys, it would have been obvious to one of ordinary skill in the art to use the unrecrystallized alloy taught by “ASM Handbook: Vol 9” for structural member of an aircraft (abstract).

5. Claims 1-5, 7, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shahani et al (US 6,027,582).

Shahani teaches a rolled, extruded or forged AlZnMgCu alloy >60 mm thick with the following composition (in weight%): 5.7-8.7% Zn, 1.7-2.5% Mg, 1.2-2.2% Cu, <0.14% Fe, <0.11% Si, 0.05-0.15% Zr, <0.02% Mn, <0.02% Cr (column 3 lines 38-52), optionally Ti (column 1 line 60). Shahani teaches the application of a T6 temper (column 16 line 5), which includes solution heating, quenching, artificially aging. Shahani teaches that the fraction of the

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recrystallized grains between the quarter thickness and half thickness  $\leq 35\%$  (column 4 lines 1-4). Shahani does not specify the intercept distance between recrystallized areas.

However, if no recrystallized grains are present, then the intercept distance between recrystallized areas = infinity (and therefore meets the instant limitation of  $>250 \mu\text{m}$ ).

Because Shahani teaches an aluminum alloy product with substantially the same composition, processed substantially as presently claimed, and with microstructural characteristics that meet the instant limitations, it is held that Shahani has created a prima facie case of obviousness of the presently claimed invention.

Concerning dependent claims 2 and 3, as stated above, Shahani teaches no recrystallized grains can be present, then the intercept distance between recrystallized areas = infinity (and therefore meets the instant limitations).

Concerning dependent claims 4, 5, and 7 Shahani teaches an overlapping alloy composition (as stated above).

Concerning dependent claim 15, Shahani teaches that said product can be used for a structural member of an aircraft (abstract).

6. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shahani et al (US 6,027,582), "ASM Handbook: Volume 9 Metallography and Microstructures" in view of Shahani et al., or Miyasato et al (US 5,865,912 A) alone, or in view of JP 2000-054051 (JP'051).

The prior art of Shahani, "ASM Handbook: Volume 9", or Miyasato does not teach the presently claimed range of Ti and B.

However, the presently claimed ranges of Ti and B are within the (inevitable) impurity limits allowed by the prior art of record (see above for specific compositions taught by the prior

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art of record). Therefore, it is held that Shahani, "ASM Handbook: Volume 9" in view of Shahani et al, or Miyasato have created a prima facie case of obviousness of the presently claimed invention.

Alternatively, the examiner points out that small amounts of Ti and B are beneficial to age hardenable aluminum alloys because the addition of Ti and B helps prevent cracking when ingots or billets are cast (see JP'051 [0012], etc.). It would have been obvious to one of ordinary skill in the art to add very small amounts of Ti and B, to the unrecrystallized Al alloys taught by Shahani, "ASM Handbook: Volume 9", or Miyasato, because JP'051 teaches that said addition of Ti and B helps prevent cracking when ingots or billets are cast.

### *Conclusion*

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janelle Combs- Morillo whose telephone number is (703) 308-4757. The examiner can normally be reached Monday through Friday from 7:30am to 5:00pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King, can be reached on (703) 308-1146. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

jcm



August 15, 2002



GEORGE WYSZOMIERSKI  
PRIMARY EXAMINER